ELK BEND MUTUAL WATER COMPANY (PWS 7300013)
SOURCE WATER ASSESSMENT FINAL REPORT

October 2, 2002

State of Idaho
Department of Environmental Quality

Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. This assessment is based on a land use inventory of the designated source water assessment area and sensitivity factors associated with the well and aquifer characteristics.

This report, *Elk Bend Mutual Water Company, Salmon, Idaho*, describes the public drinking water system, the boundaries of the zones of water contribution, and the associated potential contaminant sources located within these boundaries. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

Final susceptibility scores are derived from equally weighted system construction scores, hydrologic sensitivity scores, and potential contaminant/land use scores. Therefore, a low rating in one or two categories coupled with a higher rating in other category results in a final rating of low, moderate, or high susceptibility. With the potential contaminants associated with most urban and heavily agricultural areas, the best score a well can get is moderate. Potential contaminants are divided into four categories, inorganic contaminants (IOCs, i.e. nitrates, arsenic), volatile organic compounds (VOCs, i.e. petroleum products), synthetic organic contaminants (SOCs, i.e. pesticides), and microbial contaminants (i.e. bacteria). As different wells can be subject to various contamination settings, separate scores are given for each type of contaminant.

The Elk Bend Mutual Water Company drinking water system consists of four ground water well sources. Well #1 was virtually out of operation in October 2000. Wells #2, #3, and #4 supply most of the domestic needs of the system. All of the wells have moderate susceptibility to all categories of potential contaminants: IOC, VOC, SOC, and microbial contamination. The lack of potential contaminant sources, other than the river, as well as the poorly drained soils, and the lack of agricultural land uses in the area contributed to the ratings. Available well logs for Wells #3 and #4 provided important information to the susceptibility analysis.

Total coliform bacteria were detected in the distribution system in May 2000 and from December 2001 to February 2002, but there have been no detections at the wellheads. There have been no detections of VOCs or SOCs in any water chemistry tests. The IOCs arsenic, barium, calcium, chromium, and fluoride has been detected, but at levels below their respective maximum contaminant levels (MCLs). Nitrate has been detected at background levels of less than 1.0 milligram per liter (mg/L), far below the MCL of 10.0 mg/L.

Though there have not been chemical problems with the system water, the Elk Bend Mutual Water Company should be aware that the potential for contamination of the aquifer exists. This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources. If the system should need to expand in the future, new well sites should be located in areas with as few potential sources of contamination as possible, and the site should be reserved and protected for this specific use.

For the Elk Bend Mutual Water Company's drinking water wells, drinking water protection activities should focus on correcting any deficiencies outlined in the sanitary surveys (inspections conducted every five years with the purpose of determining the physical condition of a water system's components and its capacity), including protection of the wells from surface flooding. Also, disinfection practices should be implemented if microbial contamination becomes a problem. No chemicals should be stored or applied within the 50-foot radius of the wellheads. As the delineations track directly into the Salmon River in under 3 years, the Elk Bend Mutual Water Company should be aware of any hazardous spills occurring in the river. Since some of the designated protection areas are outside the direct jurisdiction of the Elk Bend Mutual Water Company, collaboration and partnerships with state and local agencies, and industry groups should be established and are critical to the success of drinking water protection.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan. Public education topics could include household hazardous waste disposal methods, proper care and maintenance of septic systems, and the importance of water conservation to name but a few. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA. Drinking water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil Conservation District, and the Natural Resources Conservation Service.

A community must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact the Idaho Falls Regional Office of the Idaho Department of Environmental Quality or the Idaho Rural Water Association.

SOURCE WATER ASSESSMENT FOR THE ELK BEND MUTUAL WATER COMPANY, SALMON, IDAHO

Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the ranking of this source means.** Maps showing the delineated source water assessment area and the inventory of significant potential sources of contamination identified within that area are attached. The list of significant potential contaminant source categories and their rankings used to develop the assessment is also included.

Background

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area and sensitivity factors associated with the wells and aquifer characteristics.

Level of Accuracy and Purpose of the Assessment

Since there are over 2,900 public water sources in Idaho, there is limited time and resources to accomplish the assessments. All assessments must be completed by May of 2003. An in-depth, site-specific investigation of each significant potential source of contamination is not possible. **Therefore, this assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

The ultimate goal of the assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. The Idaho Department of Environmental Quality (DEQ) recognizes that pollution prevention activities generally require less time and money to implement than treatment of a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a drinking water protection program should be determined by the local community based on its own needs and limitations. Wellhead or drinking water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

Section 2. Conducting the Assessment

General Description of the Source Water Quality

The public drinking water system for the Elk Bend Mutual Water Company is comprised of four ground water wells that serve approximately 100 people through 94 connections. Situated in Lemhi County, the wells are located south of the City of Salmon along Highway 93 and the Salmon River (Figure 1).

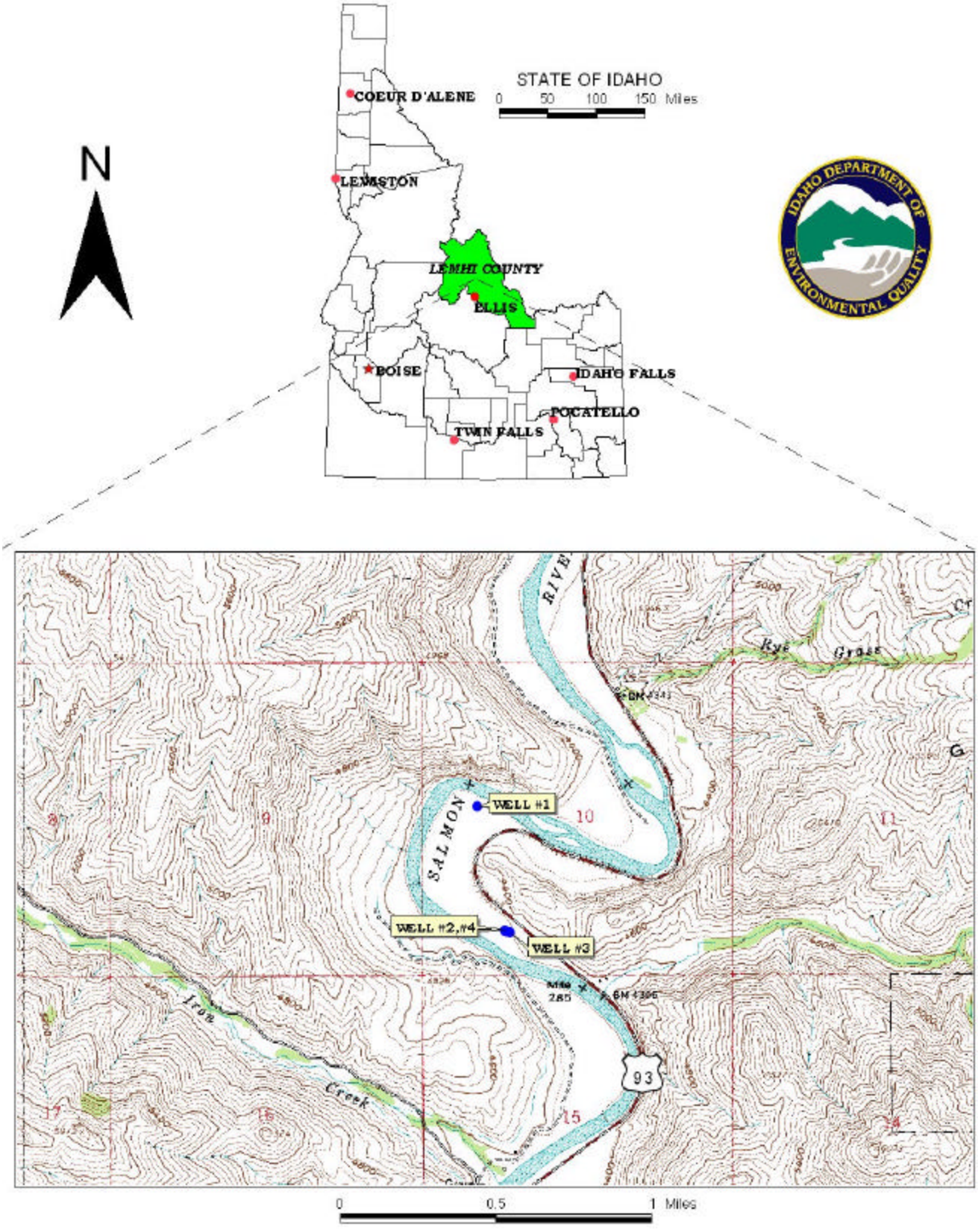
Total coliform bacteria were detected in the distribution system in May 2000 and from December 2001 to February 2002, but there have been no detections at the wellheads. There have been no detections of VOCs or SOCs in any water chemistry tests. The IOCs arsenic, barium, calcium, chromium, and fluoride has been detected, but at levels below their respective maximum contaminant levels (MCLs). Nitrate has been detected at background levels of less than 1.0 milligram per liter (mg/L), far below the MCL of 10.0 mg/L.

Defining the Zones of Contribution – Delineation

The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time-of-travel (TOT) zones (zones indicating the number of years necessary for a particle of water to reach a well) for water in the aquifer. DEQ contracted with Washington Group, International (WGI) to perform the delineations using a refined computer model approved by the EPA in determining the 3-year (Zone 1B), 6-year (Zone 2), and 10-year (Zone 3) TOT for water associated with the Upper Salmon River aquifer in the vicinity of the wells of the Elk Bend Mutual Water Company. The computer model used site specific data, assimilated by WGI from a variety of sources including the Elk Bend Mutual Water Company operator input, local area well logs, and hydrogeologic reports (detailed below).

The Upper Salmon River Basin occupies approximately 1,170 square miles in east-central Idaho. The basin is included in the Northern Rocky Mountain geomorphic province, which is characterized by high massive mountains and intermontane valleys with variably thick accumulations of sediment (Parliman, 1982, p. 4). The basin includes four hydrologic provinces: Lemhi Valley, Pahsimeroi Valley, Round Valley, and Upper Salmon River. The Round Valley and Upper Salmon River provinces are drained by the Salmon River, while the Lemhi and Pahsimeroi provinces are drained by the Lemhi and Pahsimeroi rivers, which are northwest-flowing tributaries of the Salmon River. Surface water/ground water interactions in the basin's valleys are complex. However, upper river reaches generally recharge the valleys aquifers, while the lower river reaches receive the aquifers discharge (Parliman, 1982, p. 13).

FIGURE 1. Geographic Location of Elk Bend Unit 1



The Upper Salmon River hydrologic province is a long, thin south-to-north trending basin located east of the Salmon River Mountains. Annual average precipitation in the city of Salmon is 9 inches (Donato, 1998, p.3). The Salmon River flows north and northeast along the axis of the province. The Lemhi and Pahsimeroi rivers are the major tributaries of the Salmon River contributing water drained from the Lemhi and Pahsimeroi hydrologic provinces. The valley fill is primarily Quaternary aged alluvium consisting of poorly sorted cobbles, gravel, sand, silt, and local clay lenses (Parliman, 1982, p. 8).

The valley-fill aquifer is recharged primarily through precipitation on the surrounding mountains. Seepage losses from surface water bodies and infiltration from irrigation, interaquifer flow, and septic tanks also recharge the aquifer (Parliman, 1982, p. 13). Probable mechanisms of aquifer discharge include seepage to river at the lower end of the basin and interaquifer flow.

The model used constant-head line sinks to simulate the Salmon, Pahsimeroi, and Lemhi rivers. Constant-flux line sinks backed by no-flow boundaries were placed on the basin's margin to represent recharge on the bedrock/valley-fill contact.

In the absence of published estimates of areal recharge or precipitation and evapotranspiration, a range of areal recharge values was used. The geometric mean hydraulic conductivity value (75 ft/day) based on analysis of specific capacity data was selected for simulating the base case aquifer conditions in both models. The effective porosity is 0.3, which is the default value presented in Table F-3 of the Idaho Wellhead Protection Plan for unconsolidated alluvium (IDEQ, 1997, p. F-6). The aquifer thickness (29 feet) is the average saturated thickness of the three PWS wells for which well completion data are available.

The delineated source water assessment areas for the wells of the Elk Bend Mutual Water Company can best be described as pie-shaped corridors extending south to the Salmon River from the wellheads (Figure 2 and Figure 3). The delineation for Well #1 is about 24 acres and the shared delineation of Wells #2, #3, and #4 is 2.3 acres. Each delineation only contains a 3-year TOT because of the recharging nature of the river. The actual data used by WGI in determining the source water assessment delineation areas are available from DEQ upon request.

Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and others, such as cryptosporidium, and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of groundwater contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ and from available databases.

Land use within the immediate area of wells of the Elk Bend Mutual Water Company consists of a residential, recreation, and a restaurant, motel, and service station. The surrounding area is predominantly undeveloped and recreation based.

It is important to understand that a release may never occur from a potential source of contamination provided they are using best management practices. Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination, including educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply well.

Contaminant Source Inventory Process

A two-phased contaminant inventory of the study area was conducted in March and April 2002. The first phase involved identifying and documenting potential contaminant sources within the Elk Bend Mutual Water Company source water assessment areas (Figures 2 and 3) through the use of computer databases and Geographic Information System maps developed by DEQ. The second, or enhanced, phase of the contaminant inventory involved contacting the operator to identify and add any additional potential sources in the area.

The delineated source water areas (Figures 2 and 3; Table 1) encompass pie-shaped corridors of land extending from the well sites to the south and intersecting with the Salmon River, which is the only identified potential contaminant source. An accidental spill into the river could contribute all classes of contaminants to the aquifer.

Table 1. Wells of the Elk Bend Mutual Water Company, Potential Contaminant Inventory

Site #	Source Description[1]	TOT ZONE[2]	Source of Information	Potential Contaminants[3]
	Salmon River	0 – 3	Database Search	IOC, VOC, SOC, Microbes

[2] TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead

[3] IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

FIGURE 2. Elk Bend Unit 1 Delineation Map and Potential Contaminant Source Locations

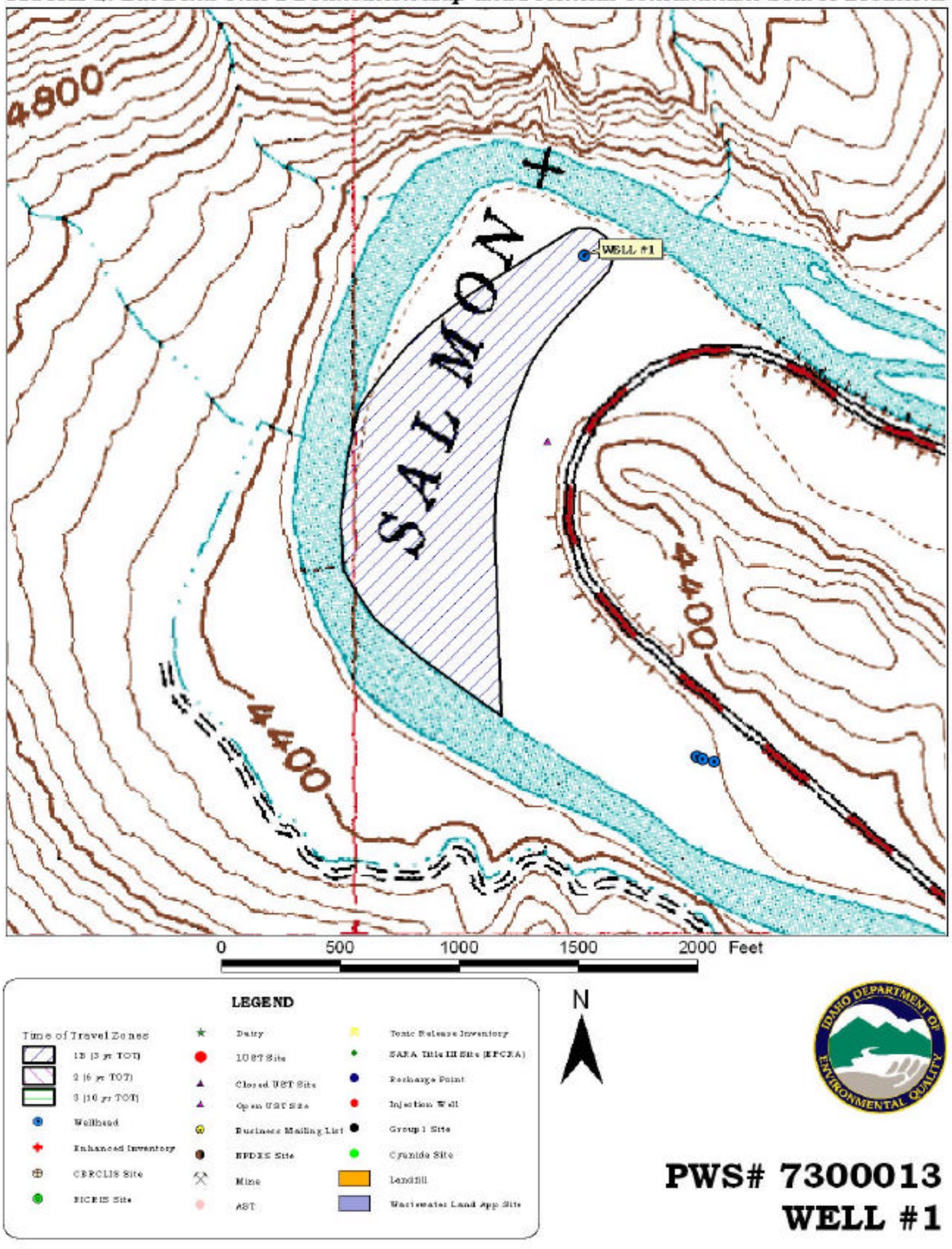
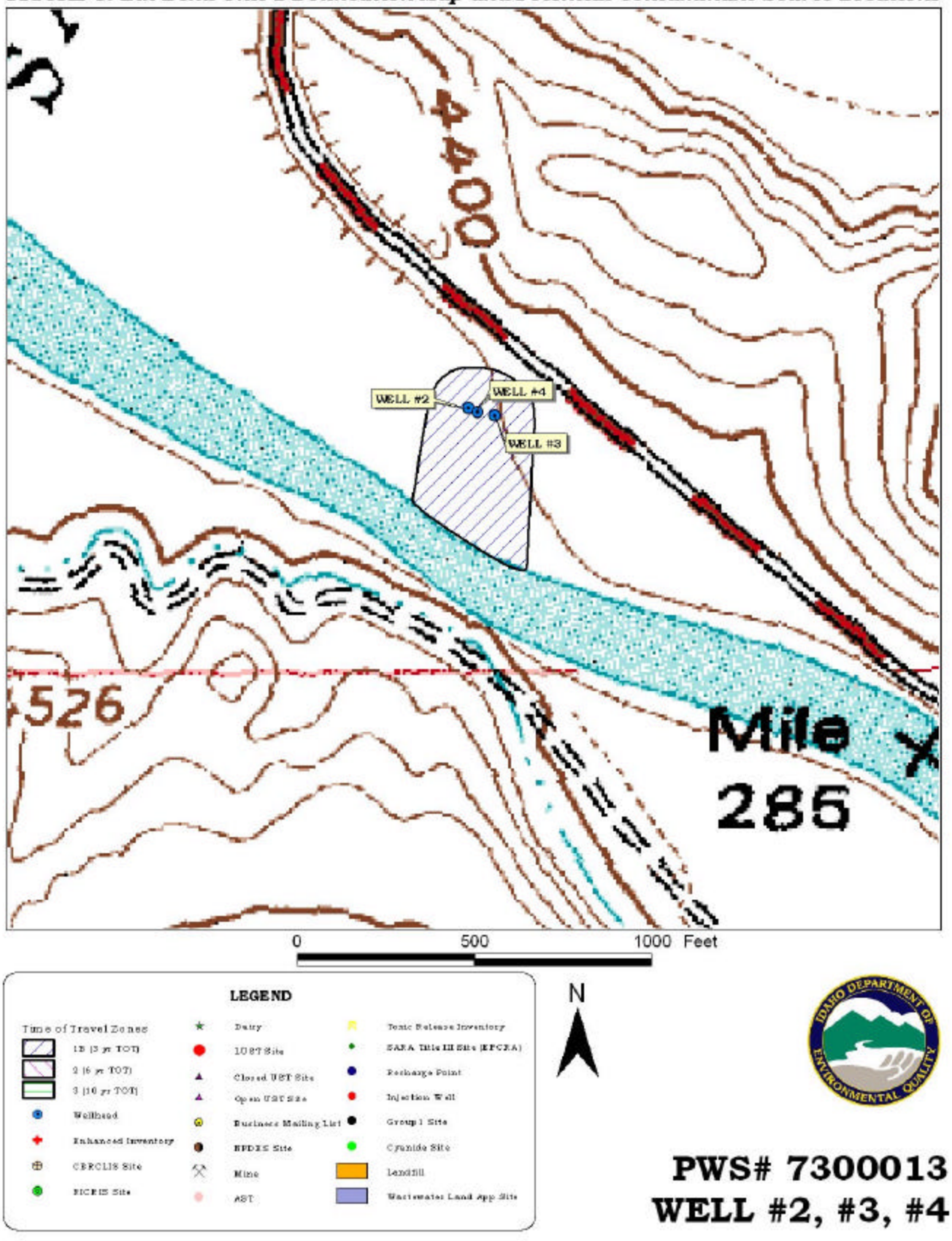


FIGURE 3. Elk Bend Unit 1 Delineation Map and Potential Contaminant Source Locations



Section 3. Susceptibility Analyses

Each well's susceptibility to contamination was ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity of the well, land use characteristics, and potentially significant contaminant sources. Each of these three categories carries the same weight in the final assessment, meaning that a low score in one category coupled with higher scores in the other categories can still lead to a overall susceptibility of high. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. Attachment A contains the susceptibility analysis worksheets for the system. The following summaries describe the rationale for the susceptibility ranking.

Hydrologic Sensitivity

The hydrologic sensitivity of a well is dependent upon four factors: the surface soil composition, the material in the vadose zone (between the land surface and the water table), the depth to first ground water, and the presence of a 50-foot thick fine-grained zone above the producing zone of the well. Slowly draining soils such as silt and clay typically are more protective of ground water than coarse-grained soils such as sand and gravel. Similarly, fine-grained sediments in the subsurface and a water depth of more than 300 feet protect the ground water from contamination.

Hydrologic sensitivity rates moderate for all four wells (Table 2). These scores are the result of regional soil data putting the soils within the delineation area in the poor to moderate drainage class. Though there are not well logs for Wells #1 and #2, operator information implies that all four wells are at similar depths. Wells #3 and #4 are drilled to less than 65 feet below ground surface (bgs) through sands and gravels. The water table is within 10 feet of the surface.

Well Construction

Well construction directly affects the ability of the well to protect the aquifer from contaminants. System construction scores are reduced when information shows that potential contaminants will have a more difficult time reaching the intake of the well. Lower scores imply a system is less vulnerable to contamination. For example, if the well casing and annular seal both extend into a low permeability unit, then the possibility of contamination is reduced and the system construction score goes down. If the highest production interval is more than 100 feet below the water table, then the system is considered to have better buffering capacity. If the wellhead and surface seal are maintained to standards, as outlined in sanitary surveys, then contamination down the well bore is less likely. If the well is protected from surface flooding and is outside the 100-year floodplain, then contamination from surface events is reduced. A sanitary survey was conducted in 1998 (DEQ, 1998) for Wells #2, #3, and #4. The sanitary survey does not note any wellhead, sanitary seal, or flood protection deficiencies.

The Elk Bend Mutual Water Company Wells #2, #3, and #4 have moderate system construction scores, mainly due to sanitary survey information. Lack of information caused Well #1 to rate high for system construction. No completion data are available for Well #2. Operator information about Well #1 indicates 16-inch diameter casing and a 38-foot deep well, perforated from 10 to 33 feet bgs. Well #3, drilled in 1985, has 0.322-inch thick, 8-inch diameter casing to 62 feet bgs into sandy gravel. The surface seal was placed to 20 feet bgs into brown rock. Well #3 was perforated from 45 to 60 feet bgs. Well #4, drilled in 1992, has 0.250-inch thick, 8-inch diameter casing to 60 feet bgs into gravel sand. The surface seal was placed to 18 feet bgs into boulders and gravel.

Though the wells may have been in compliance with standards when they were completed, current public water system (PWS) well construction standards are more stringent. The Idaho Department of Water Resources *Well Construction Standards Rules* (1993) require all PWSs to follow DEQ standards as well. IDAPA 58.01.08.550 requires that PWSs follow the *Recommended Standards for Water Works* (1997) during construction. These standards include provisions for well screens, pumping tests, and casing thicknesses to name a few. Table 1 of the *Recommended Standards for Water Works* (1997) lists the required steel casing thickness for various diameter wells. An 8-inch diameter well requires a casing thickness of at least 0.322-inches and a six-inch diameter well requires a casing thickness of at least 0.280-inches.

Potential Contaminant Source and Land Use

The wells of the Elk Bend Mutual Water Company rate low for IOCs (i.e. nitrates arsenic), VOCs (i.e. petroleum products), SOCs (i.e. pesticides), and microbial contaminants (i.e. bacteria). The lack of potential contaminant sources, other than the Salmon River, and little agricultural land within the delineations account for the lower scores.

Final Susceptibility Ranking

A detection above a drinking water standard MCL or a detection of total coliform bacteria or fecal coliform bacteria at the wellhead will automatically give a high susceptibility rating to a well despite the land use of the area because a pathway for contamination already exists. Additionally, if there are contaminant sources located within 50 feet of the source then the wellhead will automatically get a high susceptibility rating. Hydrologic sensitivity and system construction scores are heavily weighted in the final scores. Having multiple potential contaminant sources in the 0- to 3-year time of travel zone (Zone 1B) and agricultural land contribute greatly to the overall ranking. In terms of total susceptibility, the Elk Bend Mutual Water Company wells rate moderate for all categories of potential contaminants.

Table 2. Summary of Elk Bend Mutual Water Company Susceptibility Evaluation

Well	Susceptibility Scores[1]									
	Hydrologic Sensitivity	Contaminant Inventory				System Construction	Final Susceptibility Ranking			
		IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
Well #1	M	L	L	L	L	H	M	M	M	M
Well #2	M	L	L	L	L	M	M	M	M	M
Well #3	M	L	L	L	L	M	M	M	M	M
Well #4	M	L	L	L	L	M	M	M	M	M

[1]H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility,
IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Susceptibility Summary

Overall, the wells of the Elk Bend Mutual Water Company rank moderate susceptibility for IOCs, VOCs, SOCs, and microbial contaminants. The hydrologic sensitivity and system construction scores contributed greatly to the susceptibility ratings for the wells. The lack of potential contaminant sources reduced the overall scores.

Total coliform bacteria were detected in the distribution system in May 2000 and from December 2001 to February 2002, but there have been no detections at the wellheads. There have been no detections of VOCs or SOCs in any water chemistry tests. The IOCs arsenic, barium, calcium, chromium, and fluoride has been detected, but at levels below their respective MCLs. Nitrate has been detected at background levels of less than 1.0 mg/L, far below the MCL of 10.0 mg/L.

Section 4. Options for Drinking Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

An effective drinking water protection program is tailored to the particular local drinking water protection area. A community with a fully developed drinking water protection program will incorporate many strategies. For the Elk Bend Mutual Water Company's drinking water wells, drinking water protection activities should focus on correcting any deficiencies outlined in the sanitary surveys, including protection of the wells from surface flooding. Also, disinfection practices should be implemented if microbial contamination becomes a problem. No chemicals should be stored or applied within the 50-foot radius of the wellheads. Additionally, there should be a focus on the implementation of practices aimed at reducing the leaching of chemicals from land within the designated source water areas and awareness of the potential contaminant sources within the delineation zone. Since much of the designated protection areas are outside the direct jurisdiction of the Elk Bend Mutual Water Company, collaboration and partnerships with state and local agencies, and industry groups should be established and are critical to the success of drinking water protection.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any source water protection plan as the delineation is near to urban and residential land uses. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA. As there are transportation corridors through the delineation, the Idaho department of transportation should be involved in protection activities. Drinking water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil Conservation District, and the Natural Resources Conservation Service.

A community must incorporate a variety of strategies in order to develop a comprehensive source water assessment protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact the Idaho Falls Regional Office of the DEQ or the Idaho Rural Water Association.

Assistance

Public water supplies and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments.

Idaho Falls Regional DEQ Office (208) 528-2650

State DEQ Office (208) 373-0502

Website: http://www.deq.state.id.us/

Water suppliers serving fewer than 10,000 persons may contact Ms. Melinda Harper, Idaho Rural Water Association, at 208-343-7001 (mailto:mlharper@idahoruralwater.com) for assistance with drinking water protection (formerly wellhead protection) strategies.

POTENTIAL CONTAMINANT INVENTORY
LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as ASuperfund≅ is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5 mg/L.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

References Cited

Donato, M.M., 1998, Surface-Water/Ground-Water Relations in the Lemhi River Basin, East Central Idaho, United States Geological Survey, Water-Resources Investigations Report 98-4185, 20 p.

Great Lakes-Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers, 1997, "Recommended Standards for Water Works."

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Attachment A

Elk Bend Mutual Water Company
Susceptibility Analysis
Worksheets

The final scores for the susceptibility analysis were determined using the following formulas:

1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.273)

2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.375)

Final Susceptibility Scoring:

0 - 5 Low Susceptibility

6 - 12 Moderate Susceptibility

≥ 13 High Susceptibility

Ground Water Susceptibility Report Public Water System Name : ELK BEND UNIT 1 Well# : WELL #1

Public Water System Number 7300013 07/29/2002 6:54:31 AM

1. System Construction		SCORE				
Drill Date	01/01/1970					
Driller Log Available	NO					
Sanitary Survey (if yes, indicate date of last survey)	YES	1998				
Well meets IDWR construction standards	NO	1				
Wellhead and surface seal maintained	NO	1				
Casing and annular seal extend to low permeability unit	NO	2				
Highest production 100 feet below static water level	NO	1				
Well located outside the 100 year flood plain	NO	1				
Total System Construction Score		6				
2. Hydrologic Sensitivity						
Soils are poorly to moderately drained	YES	0				
Vadose zone composed of gravel, fractured rock or unknown	YES	1				
Depth to first water > 300 feet	NO	1				
Aquitard present with > 50 feet cumulative thickness	NO	2				
Total Hydrologic Score		4				
3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score	
Land Use Zone 1A	URBAN/COMMERCIAL	2	2	2	2	
Farm chemical use high	NO	0	0	0		
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO	
Total Potential Contaminant Source/Land Use Score - Zone 1A		2	2	2	2	
Potential Contaminant / Land Use - ZONE 1B						
Contaminant sources present (Number of Sources)	YES	1	1	1	1	
(Score = # Sources X 2) 8 Points Maximum		2	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1		
4 Points Maximum		1	1	1		
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0	
Land use Zone 1B	Less Than 25% Agricultural Land	0	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone 1B		3	3	3	2	
Cumulative Potential Contaminant / Land Use Score		5	5	5	4	
4. Final Susceptibility Source Score		11	11	11	12	
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate	

Ground Water Susceptibility Report Public Water System Name : ELK BEND UNIT 1 Well# : WELL #2

Public Water System Number 7300013 07/29/2002 11:09:07 AM

1. System Construction		SCORE				
Drill Date	01/01/1901					
Driller Log Available	NO					
Sanitary Survey (if yes, indicate date of last survey)	YES	1998				
Well meets IDWR construction standards	NO	1				
Wellhead and surface seal maintained	YES	0				
Casing and annular seal extend to low permeability unit	NO	2				
Highest production 100 feet below static water level	NO	1				
Well located outside the 100 year flood plain	YES	0				
Total System Construction Score		4				
2. Hydrologic Sensitivity						
Soils are poorly to moderately drained	YES	0				
Vadose zone composed of gravel, fractured rock or unknown	YES	1				
Depth to first water > 300 feet	NO	1				
Aquitard present with > 50 feet cumulative thickness	NO	2				
Total Hydrologic Score		4				
3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score	
Land Use Zone 1A	URBAN/COMMERCIAL	2	2	2	2	
Farm chemical use high	NO	0	0	0		
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO	
Total Potential Contaminant Source/Land Use Score - Zone 1A		2	2	2	2	
Potential Contaminant / Land Use - ZONE 1B						
Contaminant sources present (Number of Sources)	YES	1	1	1	1	
(Score = # Sources X 2) 8 Points Maximum		2	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1		
4 Points Maximum		1	1	1		
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0	
Land use Zone 1B	Less Than 25% Agricultural Land	0	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone 1B		3	3	3	2	
Cumulative Potential Contaminant / Land Use Score		5	5	5	4	
4. Final Susceptibility Source Score		9	9	9	10	
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate	

Ground Water Susceptibility Report Public Water System Name : ELK BEND UNIT 1 Well# : WELL #3

Public Water System Number 7300013 07/29/2002 11:09:15 AM

1. System Construction		SCORE				
Drill Date	11/15/1985					
Driller Log Available	YES					
Sanitary Survey (if yes, indicate date of last survey)	YES	1998				
Well meets IDWR construction standards	NO	1				
Wellhead and surface seal maintained	YES	0				
Casing and annular seal extend to low permeability unit	NO	2				
Highest production 100 feet below static water level	NO	1				
Well located outside the 100 year flood plain	YES	0				
Total System Construction Score		4				
2. Hydrologic Sensitivity						
Soils are poorly to moderately drained	YES	0				
Vadose zone composed of gravel, fractured rock or unknown	YES	1				
Depth to first water > 300 feet	NO	1				
Aquitard present with > 50 feet cumulative thickness	NO	2				
Total Hydrologic Score		4				
3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score	
Land Use Zone 1A	URBAN/COMMERCIAL	2	2	2	2	
Farm chemical use high	NO	0	0	0		
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO	
Total Potential Contaminant Source/Land Use Score - Zone 1A		2	2	2	2	
Potential Contaminant / Land Use - ZONE 1B						
Contaminant sources present (Number of Sources)	YES	1	1	1	1	
(Score = # Sources X 2) 8 Points Maximum		2	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1		
4 Points Maximum		1	1	1		
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0	
Land use Zone 1B	Less Than 25% Agricultural Land	0	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone 1B		3	3	3	2	
Total Potential Contaminant Source / Land Use Score - Zone III		0	0	0	0	
Cumulative Potential Contaminant / Land Use Score		5	5	5	4	
4. Final Susceptibility Source Score		9	9	9	10	
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate	

Ground Water Susceptibility Report Public Water System Name : ELK BEND UNIT 1 Well# : WELL #4

Public Water System Number 7300013 07/29/2002 11:09:24 AM

1. System Construction		SCORE				
Drill Date	06/26/1992					
Driller Log Available	NO					
Sanitary Survey (if yes, indicate date of last survey)	YES	1998				
Well meets IDWR construction standards	NO	1				
Wellhead and surface seal maintained	YES	0				
Casing and annular seal extend to low permeability unit	NO	2				
Highest production 100 feet below static water level	NO	1				
Well located outside the 100 year flood plain	YES	0				
	Total System Construction Score	4				
2. Hydrologic Sensitivity						
Soils are poorly to moderately drained	YES	0				
Vadose zone composed of gravel, fractured rock or unknown	YES	1				
Depth to first water > 300 feet	NO	1				
Aquitard present with > 50 feet cumulative thickness	NO	2				
	Total Hydrologic Score	4				
3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score	
Land Use Zone 1A	URBAN/COMMERCIAL	2	2	2	2	
Farm chemical use high	NO	0	0	0		
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO	
	Total Potential Contaminant Source/Land Use Score - Zone 1A	2	2	2	2	
Potential Contaminant / Land Use - ZONE 1B						
Contaminant sources present (Number of Sources)	YES	1	1	1	1	
(Score = # Sources X 2) 8 Points Maximum		2	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1		
4 Points Maximum		1	1	1		
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0	
Land use Zone 1B	Less Than 25% Agricultural Land	0	0	0	0	
	Total Potential Contaminant Source / Land Use Score - Zone 1B	3	3	3	2	
Cumulative Potential Contaminant / Land Use Score		5	5	5	4	
4. Final Susceptibility Source Score		9	9	9	10	
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate	